

TYPHON

Analog Synthesizer

USER'S MANUAL



dre:adbox

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Introduction

I never read manuals.

So, first of all, let me just say that if you get bored reading manuals, feel free to skip to page 5 on the quick start guide.

Now if you do keep reading,

- you're probably just waiting for the synth to arrive, or
- you like to read (though this should really not be your first choice), or
- you just need to find out more about a certain feature (but I guess you just went to the "**Table of Contents**" and already skipped all this mumbo jumbo), or
- you thought that the author of this manual (who is Yiannis) is a super cool guy and you want to check out what this Typhon stuff is all about (very unlikely).

In any case, thank you for reading this manual.

And in the case that you purchased Typhon, double thanks.

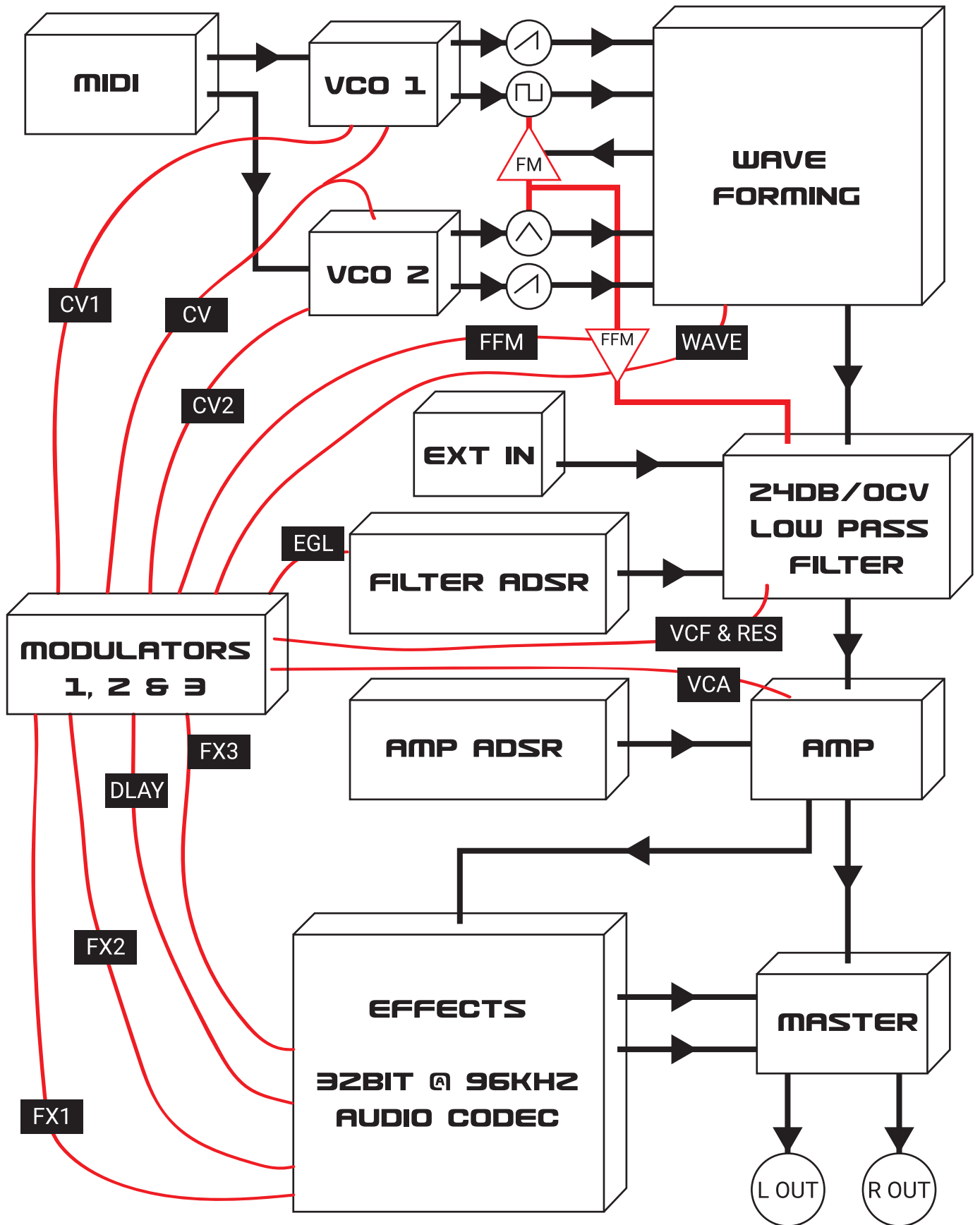
1.1 Key features

- 2 analog VCO's
- An analog 24db/octave resonating Low pass filter
- Analog VCA's
- 2 x Envelope generators dedicated to the filter and the amp respectively
- 3 x Modulators that can be either a LFO, envelope, random or step sequencer
- 32 bit @ 96kHz Stereo DSP effects coded by Sinevibes including:
 - 5 Different distortions
 - A bit crusher
 - 3 x Enhancer effects (chorus, ensemble, flanger)
 - 2 different delay types
 - A reverb
- 32 note sequencer
- 256 presets
- Extended Midi implementation (via DIN5 or USB)
- External audio input can turn this box into the ultimate effects unit
- Manage and exchange presets with the freely provided software (download from our website)
- Powered via USB, you can get 30 hours of continuous play with a 20.000 mAh power bank
- All aluminium enclosure - product made in Greece / EU

1.2 In the Box

You will find a Typhon synthesizer and a USB cable. Please note that a USB mains adapter or power supply is not included, as nowadays we all usually have few lying around the house. Almost any USB adapter will work with the Typhon, but there are some power considerations, so please check the "**Connections**" section of the manual before plugging in your Typhon.

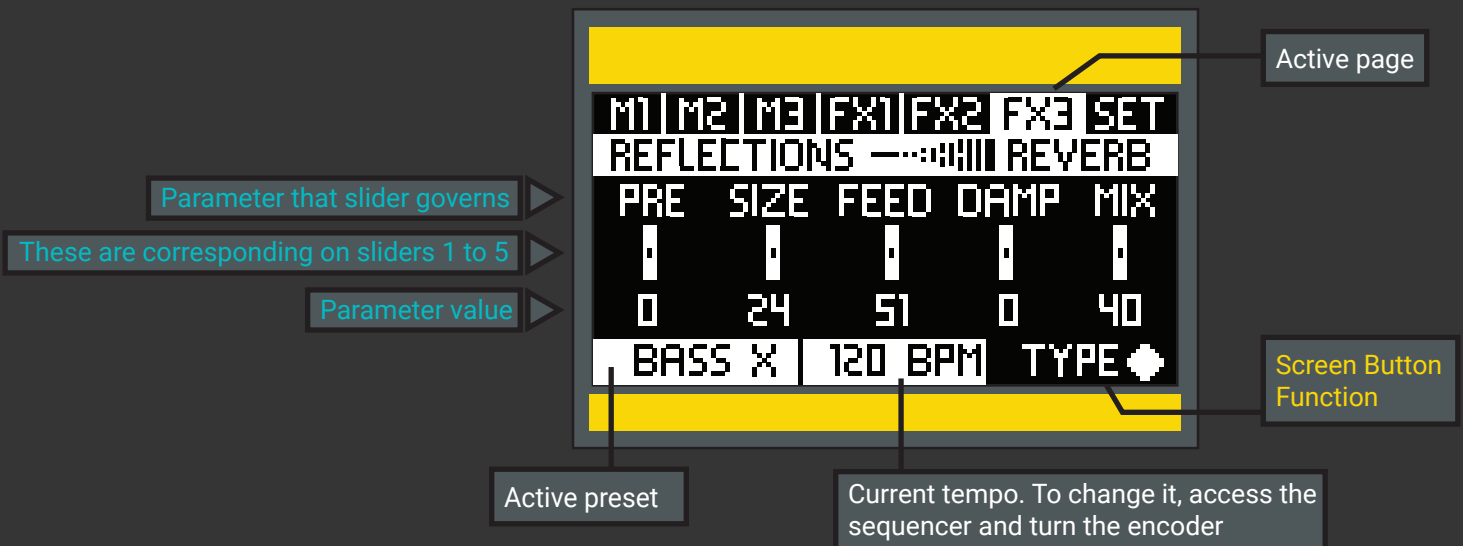
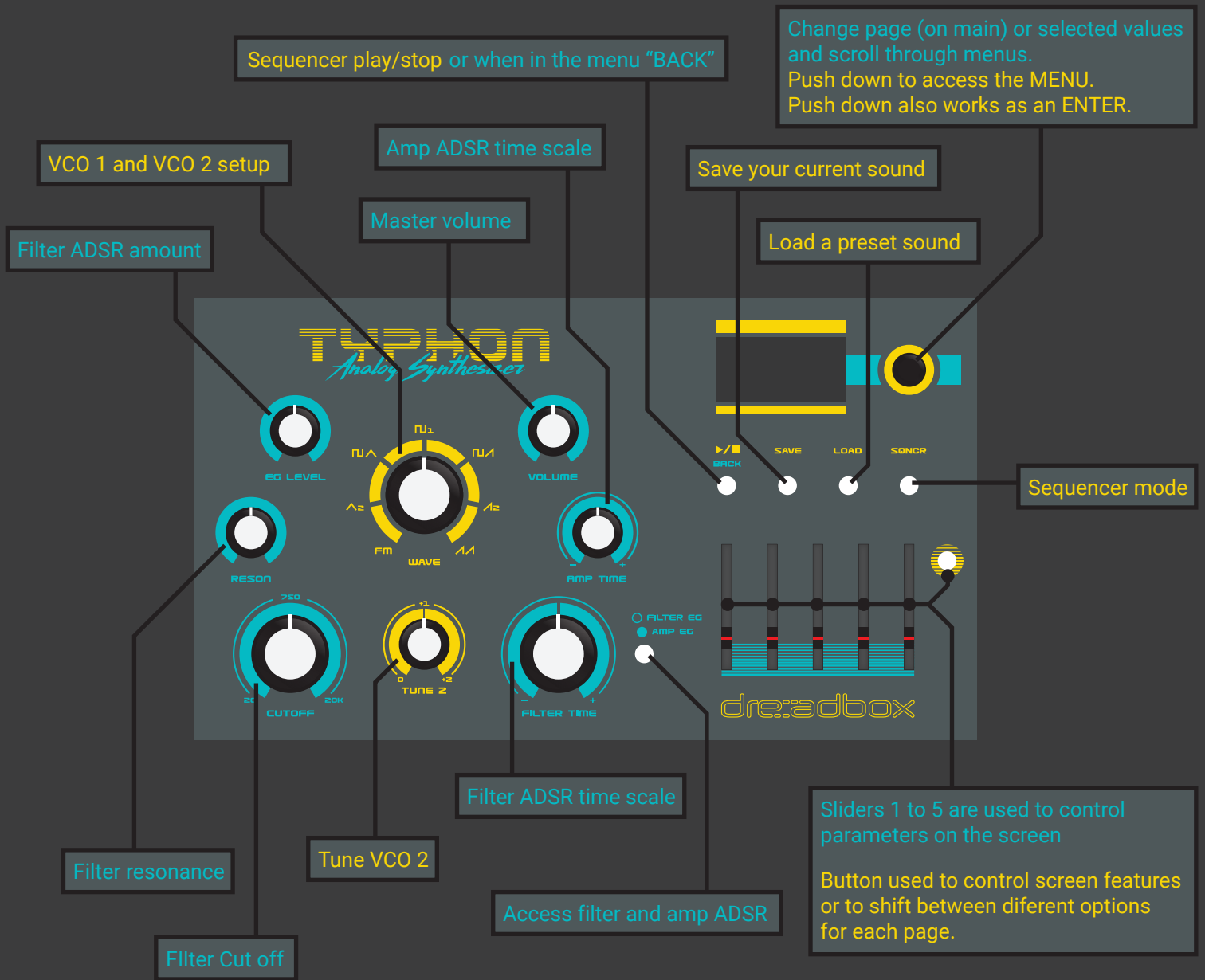
1.3 Block Diagram



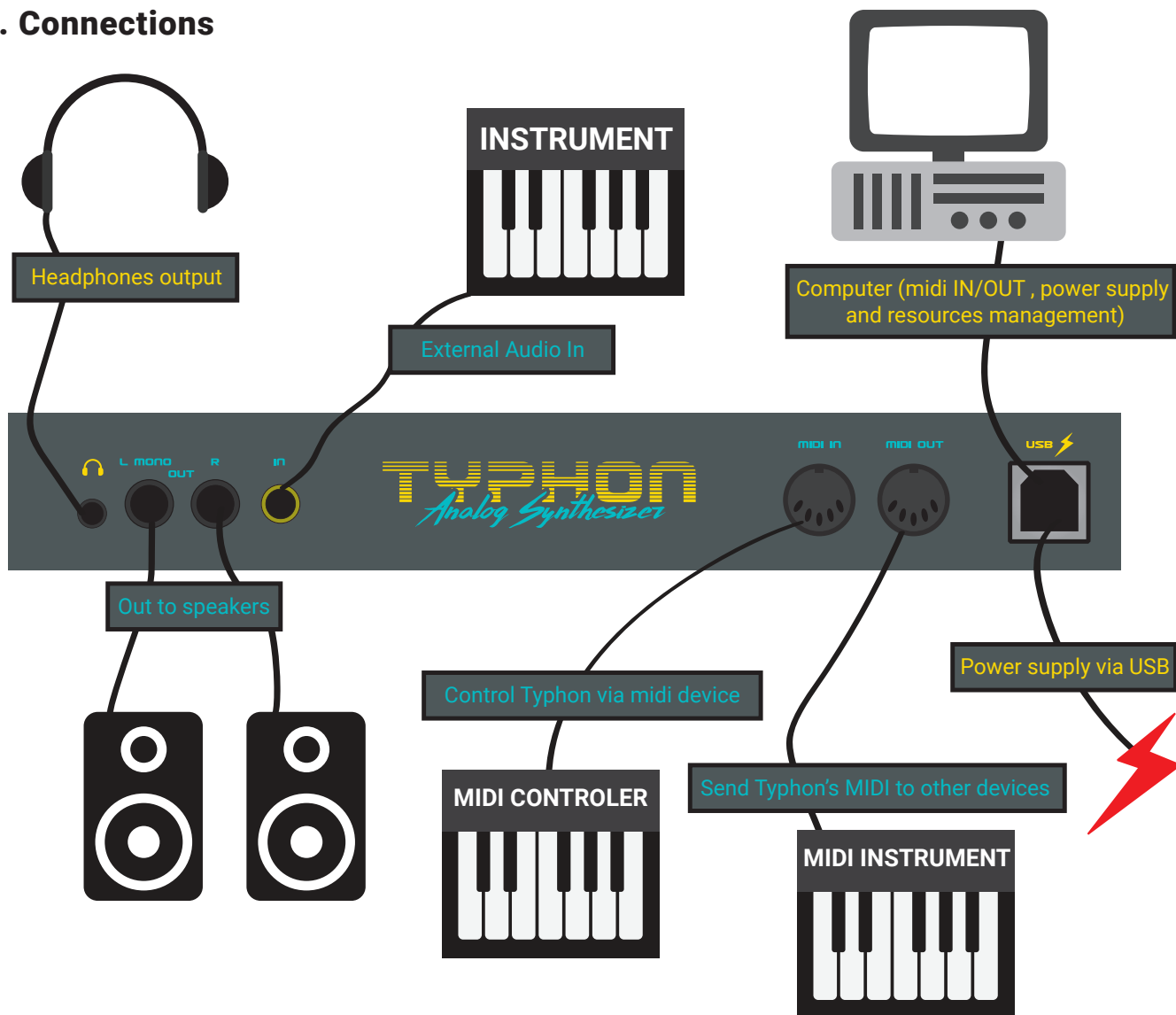
TYPHON

Analog Synthesizer

QUICK START GUIDE



2. Connections



Powering considerations

Even though the Typhon is an analog synthesizer, it can be powered with a simple USB cable. Giving the unit some extra mobility, you can just use a power bank and play anywhere (with a 20.000 mAh power bank you could power and play the unit for up to 60 hours).

Most homes nowadays have at least a dozen or so USB cables and power adapters lying around (from smartphones, computers, printers, and other devices), so we didn't think there was a point including one with the Typhon and adding to the environmental waste.

So, you're thinking, "Can I use any USB power supply?"

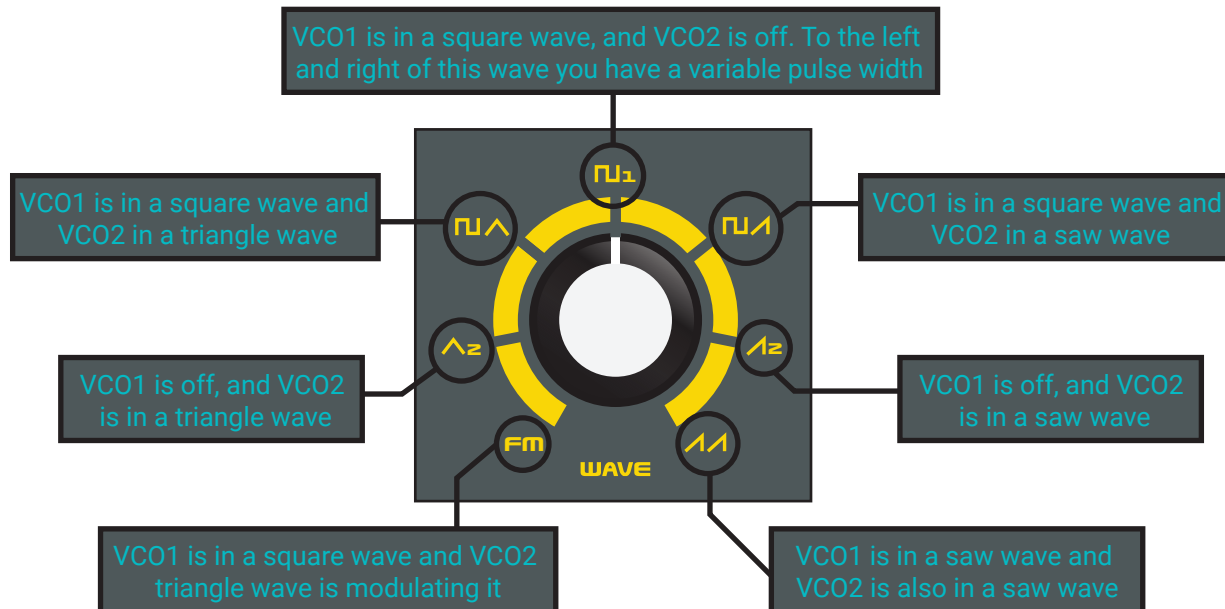
Yes, but there are some things you need to consider. Not having a dedicated power adapter means that depending on the USB power supply quality or your connection, could result in a dirty synth or noise floor. You can easily avoid those situations though, by following these simple rules:

- When powering the Typhon from a computer, if you use a DAW to process the unit's audio, a ground loop can be created, causing a noticeable hum. In that case, you should power the Typhon from a different power supply, and not from the same computer that you're running the DAW on.
- Using a very long USB cable can also cause line noise. For cleaner sounding performance it's also better to use a USB cable that has a ferrite bead installed.
- Make sure your USB power adapter is rated for at least 500mA
- Poor quality USB power adapters should be avoided.
- And as mentioned above, when using a power bank, make sure it's a good quality one. You can also power a keyboard controller with the same power bank.

3. Direct analog engine controls (left side)

Typhon's left side is dedicated to a set of 8 controls for quick and easy sound sculpting.

Wave: This controls the waveform, amplitude, and routing of the two oscillators. With just a single knob, you can get the most interesting and useful combinations that these oscillators can offer. While rotating the knob, the selected waves fade into the adjacent wave and oscillator settings, instead of just switching abruptly.



Tune 2: Controls the tuning of the second oscillator

Cut off: Controls the filter's initial cut off frequency

Reson: Controls the amount of filter feedback (Q or resonance)

EG level: Sets how much the filter ADSR envelope modulates the filter's Cutoff

Filter Time: Scales the initial filter ADSR envelope settings from 10 times as slow, up to 6 times as fast.

Amp Time: Scales the initial amp ADSR envelope settings from 10 times as slow, up to 6 times as fast.

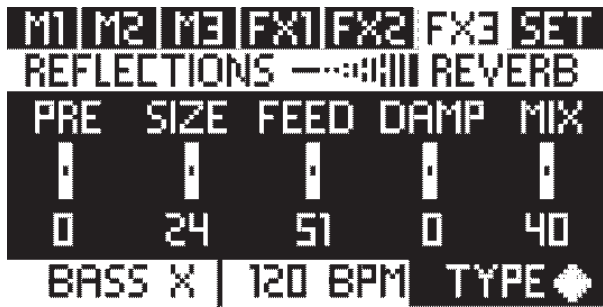
Volume: Sets the master level. Important to note, that this is a global setting and the only control that cannot be stored in a preset.

Filter EG and Amp EG button: Lets you enter the ADSR edit mode. Select the filter or the amp ADSR by pressing the "shift" button. Use the sliders to edit the envelope. By pressing it again, will exit the ADSR edit mode.

4. Screen general manual

Typhon, is built to be portable, compact sized and affordable, but offering substantial features and build quality. What we came up with, was a small, 128x64 OLED screen, controlled with a few buttons, a rotary encoder, and 5 sliders.

The general idea, is that each digital feature has a dedicated page. For example, there are 3 modulators, so there is a page for each of them (M1, M2, M3). Each of the 5 sliders is represented with a vertical line on the screen, where the top of this vertical line shows the function of the slider and the bottom of the line shows the current value for the slider.



While on the main page, rotating the encoder, will make a swap between the pages, but while in a menu, where you have lists, it will scroll the list. For a better view over that, you can also check the image located on the quick start guide.

To press enter, just push the encoder down. On the main page, this will access the menu. The back button, in the sound editing pages (modulators, effects, sequencer and envelopes) is used as the sequencer play/stop action. But when in a list or in a menu, where back is needed, this will

not control the sequencer's play/stop but it will act as a "go back" action.

5. Presets

The Typhon has a 256 patch storage locations, divided into 4 banks for easy access. On start-up, Typhon will load Bank A , preset 1.

Upon loading a preset, you can start editing and sculpting its sound. Note that your changes will not be stored unless you "SAVE" the patch.

You can also backup, rename, rearrange, exchange and download presets online with the DREADBOX SOFTWARE, provided for free on our web-page at www.dreadbox-fx.com/downloads

5.1 Loading presets:

- Press "LOAD".
- Turn the encoder to choose a Bank from A to D and select it by pressing "LOAD" or pushing down the encoder
- Turn the encoder to choose a preset from 1 to 64 and select it by pressing "LOAD" or pushing down the encoder
- You will be asked "ARE YOU SURE?" Choose by rotating the encoder and push it down, or you can just directly load your choice and ignore the question by pressing "LOAD".

5.2 Saving presets:

- Press "SAVE".
- Choose a Bank from A to D and select it by pressing "SAVE" or pushing down the encoder
- Choose a preset to replace from 1 to 64 and select it by pressing "SAVE" or pushing down the encoder
- A name editing field will appear. You can have up to 7 letters as a name for your preset. Available characters are: "A B C D E F G H I J K L M N O P Q R S T U V W X Y Z 1 2 3 4 5 6 7 8 9 / - + % * . ? _ and the SPACE.
- To change a character, rotate the encoder; to move to the next character, push the encoder; to go back, just press "BACK".
- When you are done press "SAVE"

6. Modulators

6.1 General

There are 3 available modulators, M1, M2, M3, that can be used on the Typhon. These 3 modulators can work at the same time and have multiple destinations for each modulator with different modulation amounts. Each modulator can be set to one of the following 4 modulation sources:

LFO | Envelope | Random generator | Step sequencer

Even though each modulator (M1, M2, or M3) can have multiple destinations, each modulator can only have one modulation source. So for example, M1 can have an LFO that modulates CV, Filter Cutoff, and Amp, but M1 can only have ONE of the 4 modulation sources operating at a time.

Each of the modulation sources has 3 dedicated controls to shape its motion. These are always the first 3 sliders. The last 2 sliders always control the destination (target of the modulator) and the level (amount of modulation). Those settings are preserved no matter which of the 4 modulation sources is selected for the modulator.

For example: You set a LFO, with DEST being CV, set at LVL being +10. If you switch the modulation source to an envelope, DEST CV will still have a value of +10.

Note that for CV-related destinations (DEST values of CV, CV1, or CV2), LVL values run from 0 to 0.9 and then 1 to 24, with the values representing semitones, but with all the other possible destination values (DEST), LVL values are scaled +/-100.

Available modulator destinations (DEST) :

CV	Pitch of both VCO
CV1	Pitch of VCO 1
CV2	Pitch of VCO 2
WAVE	Waveform of oscillators (as shown on the WAVE knob)
CUT	Filter cut off frequency
RESON	Filter resonance amount
EGL	Level of filter envelope
VCA	AMP level
FX1	When is set to distortion, this will affect both GAIN and MIX . When on BIT CRUSH, it will target the "BIT" parameter
FFM	Filter FM amount
FX2	FX2 MIX amount
DLAY	This is for the FX3. It will target the delay time or the reverb size
FX3	FX3 MIX amount

6.2 LFO

The LFO or low frequency oscillator modulation source, is the simplest and the most common form of modulation that can be found in analog synthesis. A set of values are produced based on the selected waveform, and when that waveform ends, it just starts again. Your controls are:

RATE: The rate at which the cycle of the selected waveform is completed, or simply, the speed of the modulation.

WAVE: The LFO waveform . You can choose between Triangle, Square, 25% Pulse, Trapezoid, and Chaos Saw. In each cycle, the Chaos Saw randomly generates Saw waves at a different amplitude or level.

FADE: Dynamic control over the LVL of the LFO. When set to positive values, a fade in will occur. With negative values, the LFO fades out, until it reaches 0 LVL. A value of -100 means a one shot LFO. For no fade, just set this value to 0.

DEST: Modulation destination or target

LVL: Modulation level for the selected destination. You can have negative values. This lets you change the waveform by 180 degrees. For example the Saw is falling with positive (+) values, but rising with negative () values.

6.3 Envelope

With the envelope modulation source, a set of values are produced based on a user-defined envelope. Unlike the LFO (which repeats), the envelope only executes once (single shot) when triggered. It's also a common feature found in analog synthesis, mostly used for amplitude and filter expression.

Your controls are:

- A:** Attack, sets the rate the values rise for the first step of the envelope.
- D/R:** Decay / release, determines the rate the values fall for both the decay and release steps of the envelope.
- S:** Sustain, sets the level at which the values hold or stay when a key is pressed.
- DEST:** Modulation destination or target
- LVL:** Modulation level for the selected destination. You can have negative values. This allows you to shape the envelope in the opposite direction.

6.4 Random

The random modulation source, is exactly what the title describes: A random value generator, or as frequently (but not correctly) described a sample and hold.

Your controls are:

- RATE:** Speed at which the different values are randomly produced. When the LFO is synced to the unit BPM, this will also be governed by BPM divisions
- LAG:** Time at which different values slide
- PROB:** Chances that a new value will be produced
- DEST:** Modulation destination or target
- LVL:** Modulation level for the selected destination. You can have negative values. This allows you to have the random moving into inverted values.

6.5 Step sequencer

Like the note sequencer, the step sequencer is synchronized to the Typhon's BPM setting, but the two should not be confused as both provide different functions. While the note sequencer acts like a controller playing notes, the step sequencer is just another way to modulate parameters like the Filter Cutoff or the waveforms of the Oscillators.

The step sequencer always runs at the BPM rate, and it will also take advance of the note sequencer parameter "DIVISIONS" (for more info about this go to the "Note sequencer" section). The step sequencer continuously runs in the background, but restarts with every new note trigger, or every time you press the play button (when play is already engaged, it must first be stopped before it can take action again).

Your controls are:

- #:** Number of active steps
- Step:** Chosen step to edit
- >LVL:** Selected step value
- DEST:** Modulation destination or target
- LVL:** Modulation level for the selected destination. You can also have negative values. This lets the step sequencer modulation subtract from the destination's values.

Create a step sequencer pattern:

Let's make a simple pattern that modulates the filter cut off.

1. Push down the encoder and from the menu choose option 1. INITIAL PRESET

2. Set the CUTOFF knob at about 50%, and the RESON knob at about 70% so that the sound gets dark.
3. Select M1 and then hit the MODE (or shift) button until "STEP" is armed
4. Set the first slider (#) at 4
5. Select "CUT" as destination (slider 4) and set its level at + 50 (slider 5)
6. Select STEP 1 (slider 2) and set its LVL at 0 (slider 3)
7. Select STEP 2 (slider 2) and set its LVL at 15 (slider 3)
8. Select STEP 3 (slider 2) and set its LVL at 35 (slider 3)
9. Select STEP 4 (slider 2) and set its LVL at 55 (slider 3)

Now hit a note with your keyboard and you will notice that the filter is being modulated at the same BPM rate as the recorded pattern you just made. To change the pattern rate, hit SQNCR and rotate the encoder. For more info about BPM check "9. NOTE SEQUENCER"

7. The Sinevibes Effects

Typhon is equipped with a set of powerful DSP effects developed by Sinevibes. For more info about Sinevibes, please visit www.sinevibes.com

A high-quality, 32bit codec, running at 96kHz, is used to produce these effects, providing unparalleled sound quality. The chain of effects are ordered exactly the way they are named. FX1, then FX2, and finally FX3. Only one FX type can be active for each of the 3 categories. For example, you cannot have both the delay and reverb algorithms running at the same time, because they are both located on FX3.

When modulating an FX parameter (using any of the modulators), the algorithm that is modulated will be the one that is currently selected or armed for either FX1, FX2, or FX3.

All of the effects are stereo, but only some of them will produce a stereo element. The rest of the effects are still able to process a stereo signal.

7.1 FX1: Distortion and Bit crush

FX1 is dedicated to distortion algorithms. Filter FM or just FFM (VCO2 Triangle wave modulating Filter Cutoff) and the Bit Crusher are also located here, as we consider these to be distortion effects.

You can choose between 6 different algorithms:

Hard Clipping | **Foldback** | **S-curve** | **Triangle Clipping** | **Shred** | **Bit Crusher**

Your control values are global for all algorithms and they are:

GAIN: Distortion pre-gain
MIX: Effect mix (from full dry to full wet)
FFM: Filter FM amount

When using the Bit Crusher algorithm, GAIN becomes the sampling rate, and MIX the Bit depth.

7.2 FX2: Enhancers (Chorus, Ensemble, Flanger)

FX2 is dedicated to three different time-based delay effects and these are:

Chorus | **Ensemble** (a polyphonic chorus) | **Flanger**

The controls are:

DEPTH: Modulation amount

SPD: Modulation speed

WIDTH: When this is at 0, the effect is MONO. As you advance to 100 the left and right channels are split and a stereo effect is produced. At 100, both left and right channels have a 180 degree inverted modulation.

FEED: Feedback of the effect

MIX: Dry/wet balance. This parameter is global for all 3 algorithms

7.3 FX3: Reflections (Delay, Ping pong, Reverb)

FX3 is dedicated to delay and reverb effects and include:

- Delay (a stereo delay that can have different delay times on each channel)
- Ping pong delay
- Reverb (a huge, lush reverb)

All three share two common controls, that are governed from slider 4 to 5:

DAMP: A filter is added to the feedback loop of the effect. Minus values set a low pass filter and positive a High Pass one

MIX: Dry/wet balance. This parameter is global for all 3 algorithms

The 3 first controls for the Delay are:

L: Left channel delay time

R: Right channel delay time

FEED: Amount of repeats

For the Ping Pong:

TIME: Delay time

EMPTY: This control does nothing

FEED: Amount of repeats

For the Reverb:

PRE: Pre Delay time. A faint buzzing noise may be heard when changing values while the reverb is active

SIZE: Room size

FEED: Decay time

8. Other settings

The right-most page "SET" allows access to the following settings:

GLIDE: Portamento rate

TRK: Filter key track

VCO: Both VCO1 and 2 levels. This will attenuate the waveform that is produced from the Wave control

LEGATO button: Legato On or Off (will affect portamento and envelope re-trigger)

9. Note Sequencer

9.1 Controls

The note sequencer is a module that tells the Typhon what notes to play, when to play them, and how to play them. You can have from 1 to 32 steps in a sequence, covering a 6-octave range of notes.

To access the sequencer, press the SQNCR button. When in sequencer edit mode, the button will be lit. To exit the sequencer edit mode, just hit the SQNCR button again.

When in sequencer edit mode, the ENCODER now changes functions:

Rotate the encoder to change the BPM rate, or Press it Down to copy/paste a step's settings to another step.

Your sequencer controls are:

STEP: Choose the step you want to edit

OCV: Set the step's octave

NOTE: Set the step's note

GATE: Gate length. Use a value of 0 to get a note REST (no trigger) and a value of 100 to get a note TIE (which ties the current step to the next step in the sequence)

VEL: Step's velocity value. You must setup a Velocity target from the menu in order for this to work. For more info check 10.4 "Velocity"

And with shift ON (the button to the right of the sliders), you get access to these controls:

LENG: Sequence length. This also defines the max STEP value you can edit

DVS: BPM divisions

PROB: Chances that a step will be played. If a step isn't played, a rest will be produced instead.

SWI: Swing amount. For more info about swing, check this awesome article <https://www.attackmagazine.com/technique/passing-notes/daw-drum-machine-swing/>

9.2 Edit a sequence

Let's try to create a simple sequence of 4 steps playing C, E, G, B.

1. Push down the encoder and from the menu, choose option 1. INITIAL PRESET

2. Hit SQNCR, then press SHIFT (button 1) and set:

LENG = 4 (this will have 4 active steps)

DVS = 8 (produces 8 triggers/ BPM)

PROB = 75 (this allows a 75% chances that a note will be played)

SWI = 50 (this is no swing)

3. Exit SHIFT mode and select the first step to edit: With slider 1 (STEP) choose 1.

4. Set :

OCV = +2

NOTE = C

GATE = 50

VEL = 0

5. Then push down the encoder. A message "COPIED" will appear at the bottom right of the screen. Select STEP = 2. Then push the encoder down again. This process should paste the STEP 1 settings into STEP 2.

6. At this step (2) change NOTE to E and VEL to 25

7. Push the encoder again and select STEP 3. Push again to paste step's 2 settings.

8. At this step (3) change the NOTE to G and VEL to 60

9. Push the encoder one more time and select STEP 4. Push again to paste step's 3 settings

10. Now on this step (4) change the NOTE to B and VEL to 100

Press Play. A very simple sequence will be played.

9.3 Advanced note sequencer tactics

To follow up with this tutorial, please first complete chapter 9.2 "Edit a sequence".

So, we have a sequence playing. Now let's put the VELOCITY in use:

1. Exit the sequencer edit mode by pressing the SQNCR button.
2. Press the encoder and from the menu, choose option 4. VELOCITY
3. Choose option 5. CUT
4. Set to 50
5. Press "BACK" to exit the menu.
6. Adjust the CUTOFF at about 10 o'clock. You can also set the RESON to max for the result to be more dramatic.

And finally let's add a step sequencer to this:

1. On the MAIN page, select M1
2. Push MODE (button 1) until you have the step sequencer armed.
3. Set:

#: 5
Step: Chosen step to edit - see below
->LVL: Selected step value - see below
DEST: FX1
LVL: +100

4. Choose :
STEP 1 and set -> LVL 0
STEP 2 and set -> LVL 40
STEP 3 and set -> LVL 10
STEP 4 and set -> LVL 100
STEP 5 and set -> LVL 20

10. Menu

To access the MENU, from the main page, push the encoder.

This will let you edit and manage some of the most useful parameters for controlling the Typhon.

The list is:

- 1 Modulator Sync
- 2 Mod Wheel
- 3 Velocity
- 4 Aftertouch
- 5 Key Track
- 6 CC2
- 7 Pitch Wheel
- 8 Midi Channel
- 9 List of CC's
- 10 Firmware Update
- 11 Calibration

To exit the menu just press "BACK".

10.1 Modulator sync

You can choose how your modulators sync with respect to the internal BPM clock or with each keyboard/sequencer trigger.

This option only works for the LFO and RANDOM modulator sources.

Entering this option will get you to the following list:

1. M1
2. M2
3. M3

Choosing any of these will ask you to choose one of the following options:

1. FREE (the modulators will run freely according to the set RATE)
2. KEY (each time a new note is pressed, the modulators will start over)

10.2 Mod Wheel

This will set one or more destinations for your controller's modulation wheel.

Upon entering this option, you will be asked to choose a destination, and then the amount for that destination.

10.3 Velocity

This will set one or more destinations for the Velocity parameter.

Upon entering this option, you will be asked to choose a destination, and then the amount for that destination.

Velocity orders can be sent either by an external midi controller, or by velocity values in the note sequencer.

10.4 Aftertouch

This will assign aftertouch to one or more destinations.

Aftertouch is controlled by the amount of pressure applied to a key, and can be found on many synths.

After entering this option, you will be asked to choose a destination, and then the amount for that destination.

10.5 Key Track

This will set one or more destinations for the key track parameter. Key tracking will add an offset, according to what note the synth plays.

Entering this option, you will be asked to choose a destination, and then the amount for that destination.

Key track can be input either by an external midi controller, or by note values in the note sequencer.

10.6 CC2

This will set one or more targets for the CC2 parameter.

CC2 is a midi order originally associated with breath controllers, that can be used by an external controller or by a DAW. Upon entering this option, you will be asked to choose a destination, and then the amount for that destination.

10.7 Pitch Wheel

The pitch wheel is an essential tool used while playing a keyboard, letting the player bend the pitch up or down a set number of semi-tones. Here you can choose the maximum number of semitones the pitch will bend up or down.

10.8 Midi Channel

Here you can set what midi channel the Typhon uses to receive midi data, as well as what midi channel the Typhon is transmitting on.

Entering this setting you have 2 options:

1. INPUT - choose from channel from 1 -16 or ALL
2. OUTPUT - choose from channel from 1 -16 or THROUGH. Through, will just transmit whatever midi data the Typhon is receiving.

10.9 List of CC's

This is just a list of midi CCs for reference, which can't be edited.

10.10 Calibration and hardware check

To be updated

11. MIDI implementation

Typhon can accept the following MIDI messages:

- Note ON/OFF
- Note Number
- Aftertouch
- Velocity
- Modulation Wheel
- Pitch Bend

For Firmware version 1.0 , MIDI over USB will not be available. This is expected on September 2020.

Here is a list of the current open CC orders. This will be continuously upgraded with every Firmware update release. Expect a full MIDI implementation on September 2020.

TARGET	VALUE	CC No#
MOD WHEEL	0-127	1
CC2	0-127	2
OSC2 OFFSET	0-127	8
CUTOFF	0-127	4
RESONANCE	0-127	3
WAVESHAPE	0-127	6
GLIDE	0-127	5
VCO LEVEL	0-127	7
FILTER EG ATTACK	0-127	23
FILTER EG DECAY	0-127	24
FILTER EG SUSTAIN	0-127	25
FILTER EG RELEASE	0-127	26
FILTER TIME	0-127	27
EG LEVEL	0-127	28
VCA EG ATTACK	0-127	29
VCA EG DECAY	0-127	30
VCA EG SUSTAIN	0-127	31
VCA EG RELEASE	0-127	33
VCA EG TIME	0-127	34

12. Specifications & Connections

USB powered (at least 500mA)

60 Playing hours with 20,000mA portable power bank

MIDI Din IN and OUT

¼ in Stereo Out

⅜ in Headphone Out

⅜ in Mono Audio In (for routing via Typhon FX)

Dimensions: 23 x 13 x 6 cm

Weight: 1kg

dre:adbox

JUNE 2020